

Table C10. Method Detection Limit (MDL) Analysis Using Ribbed-Mussel Replicates from Sandy Hook Bay.¹

Sample ID	Total Sample Wt (in g)	Nonane (n-C ₉)	Decane (n-C ₁₀)	Undecane (n-C ₁₁)	Dodecane (n-C ₁₂)	Tridecane (n-C ₁₃)	Tetradecane (n-C ₁₄)	Pentadecane (n-C ₁₅)	Hexadecane (n-C ₁₆)	Heptadecane (n-C ₁₇)	Pristane	Octadecane (n-C ₁₈)	Phytane	Nonadecane (n-C ₁₉)	Eicosane (n-C ₂₀)	Heneicosane (n-C ₂₁)	Docosane (n-C ₂₂)	Tricosane (n-C ₂₃)
Mussel MDL Determination Using Internal Standard Calculations (µg/g, wet wt.)																		
297031717		0.23	0.09	0.15	0.18	0.23	0.36	0.43	0.45	0.47	0.43	0.44	0.45	0.49	0.48	0.70	0.93	0.56
297031718		0.02	0.11	0.19	0.25	0.30	0.40	0.44	0.43	0.44	0.40	0.40	0.41	0.47	0.45	0.72	0.95	0.83
297031719		0.02	0.11	0.20	0.23	0.27	0.33	0.43	0.44	0.48	0.38	0.39	0.39	0.45	0.52	0.88	1.35	1.41
297031720		0.02	0.09	0.15	0.19	0.25	0.36	0.43	0.46	0.48	0.45	0.45	0.46	0.51	0.56	0.74	1.19	1.68
297031721		0.02	0.15	0.27	0.28	0.33	0.43	0.52	0.50	0.52	0.46	0.46	0.47	0.54	0.59	0.86	1.42	2.07
297031722		0.02	0.11	0.19	0.24	0.30	0.42	0.49	0.51	0.51	0.47	0.47	0.46	0.53	0.61	1.04	0.99	2.58
297031723		0.02	0.11	0.20	0.26	0.31	0.41	0.46	0.46	0.48	0.41	0.41	0.41	0.47	0.45	0.75	1.37	0.53
Average		0.05	0.11	0.19	0.23	0.28	0.39	0.46	0.46	0.48	0.43	0.43	0.44	0.50	0.53	0.81	1.17	1.38
Std Dev (σ)		0.08	0.02	0.04	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.07	0.12	0.22	0.79
%RSD or %CV		147	18.6	20.1	15.8	12.2	9.33	7.73	6.18	5.50	7.40	7.35	6.94	6.98	12.6	15.0	18.5	56.9
MDL ²		0.24	0.06	0.12	0.12	0.11	0.11	0.11	0.09	0.08	0.10	0.10	0.10	0.11	0.21	0.38	0.68	2.47

¹ The tissue matrix for these samples was prepared by combining together 12 depurated ribbed mussels collected at Sandy Hook Bay into a homogenate. Individual portions of this homogenate were then used for the MDL analysis. Each sample was spiked with 4 µg of each individual hydrocarbon.

² MDL = σt ; where σ is the standard deviation and t is the Students t value. For 99% confidence level, 6 degrees of freedom (one-tailed), $t = 3.143$.

Individual Analyte Recoveries from Mussel MDL Replicates³

		Analyte Amounts (µg) Added																
		3.99	3.99	3.96	4.03	4.03	3.99	4.03	3.99	4.02	4.01	4.03	4.00	4.03	4.02	4.04	4.02	4.04
		Non-Spiked Mussel Sample Analyte Concentrations (µg/g)																
297031724	7.99	0.02	0.02	0.04	0.03	0.01	0.04	0.02	0.04	0.04	0.00	0.00	0.00	0.02	0.04	0.29	0.35	0.10
		Mussel MDL Replicate Analyte Percent Recoveries																
297031717	7.97	43.7	17.6	28.9	33.3	44.4	67.4	81.7	83.6	85.6	85.4	87.0	89.8	93.1	89.0	88.0	108	92.4
297031718	7.99	4.51	20.8	36.5	46.9	57.8	73.5	83.7	79.1	81.0	78.4	79.1	82.7	88.0	83.4	90.8	111	137
297031719	7.99	4.51	20.4	38.3	43.4	51.9	61.9	80.7	80.9	87.6	76.2	77.2	78.6	84.9	96.2	111	158	233
297031720	7.99	4.51	17.8	27.6	35.1	48.8	66.3	81.0	85.2	88.4	88.4	89.4	92.0	96.2	104	94.1	139	277
297031721	7.97	4.51	29.4	49.8	52.1	63.5	79.9	97.5	91.7	95.1	90.6	91.6	92.9	103	109	108	166	341
297031722	7.99	4.51	21.3	36.0	43.9	58.0	78.0	93.5	93.3	94.0	92.5	92.8	92.4	99.8	113	132	115	425
297031723	7.98	4.51	21.3	36.8	47.9	59.1	75.3	87.9	84.8	87.3	81.3	81.5	81.3	89.2	83.7	94.9	160	87.2

³ The mussel analyte recoveries in each MDL replicate was calculated using the formula: Percent Recovery is calculated as $100 * \text{AMTMDL} / (\text{AMNTADD} + \text{AMNTBKGRD})$ where AMNTMDL is the analyte amount measured following extraction and cleanup of each MDL replicate, which is calculated as

(Sample Wt of the MDL Replicate in g) * (Analyte Concentration in µg/g in the MDL Replicate);

AMNTADD is the amount of analyte added to the unspiked mussel MDL replicate in µg; and

AMNTBKGRD is the measured analyte amount in the non-spiked sample following extraction and cleanup, which is calculated as

(Non-spiked Sample Wt in g) * (Analyte Concentration in µg/g in the Non-spiked Sample).

Table C10. (Continued).

Sample ID	Total Sample Wt (in g)	Tetacosane (n-C ₂₄)	Pentacosane (n-C ₂₅)	Hexacosane (n-C ₂₆)	Heptacosane (n-C ₂₇)	Octacosane (n-C ₂₈)	Nonacosane (n-C ₂₉)	Triacontane (n-C ₃₀)	n-Hentriacontane (n-C ₃₁)	Dotriacontane (n-C ₃₂)	Triacontane (n-C ₃₃)	Tetracontane (n-C ₃₄)	Pentriacontane (n-C ₃₅)	Hexatriacontane (n-C ₃₆)	Heptatriacontane (n-C ₃₇)	Octatriacontane (n-C ₃₈)	Nonatriacontane (n-C ₃₉)	Tetracontane (n-C ₄₀)	Total Petroleum Hydrocarbons ²
Mussel MDL Determination Using Internal Standard Calculations (µg/g, wet wt.)																			
297031717	0.46	0.49	0.47	0.45	0.48	0.47	0.46	0.47	0.48	0.45	0.46	0.43	0.42	0.37	0.33	0.29	0.26	32.5	
297031718	0.43	0.52	0.43	0.42	0.43	0.43	0.45	0.45	0.45	0.41	0.42	0.39	0.37	0.50	0.29	0.27	0.23	35.6	
297031719	0.47	0.73	0.42	0.44	0.43	0.44	0.47	0.52	0.56	0.50	0.42	0.37	0.34	0.42	0.33	0.26	0.22	47.2	
297031720	0.49	0.49	0.47	0.46	0.49	0.50	0.52	0.53	0.56	0.55	0.48	0.45	0.44	0.39	0.50	0.29	0.25	33.9	
297031721	0.51	0.59	0.48	0.49	0.50	0.52	0.53	0.56	0.55	0.48	0.47	0.43	0.41	0.38	0.32	0.28	0.25	42.7	
297031722	0.69	0.62	0.52	0.44	0.62	0.92	0.88	0.49	0.52	0.48	0.47	0.44	0.41	0.49	0.31	0.28	0.25	81.2	
297031723	0.43	0.54	0.43	0.43	0.44	0.44	0.48	0.50	0.45	0.41	0.40	0.37	0.35	0.44	0.26	0.24	0.22	37.2	
Average	0.50	0.57	0.46	0.45	0.48	0.53	0.54	0.50	0.50	0.45	0.44	0.41	0.38	0.44	0.30	0.27	0.24	44.3	
Std Dev (σ)	0.09	0.09	0.04	0.02	0.06	0.18	0.15	0.04	0.04	0.03	0.03	0.03	0.03	0.06	0.03	0.02	0.02	17.1	
%RSD or %CV	18.3	15.1	7.94	5.51	13.4	33.4	28.4	7.29	8.62	7.41	6.34	7.98	7.98	12.8	8.67	6.73	7.45	38.5	
MDL ¹	0.29	0.27	0.11	0.08	0.20	0.56	0.48	0.11	0.14	0.11	0.09	0.10	0.10	0.18	0.08	0.06	0.06	53.6	

¹ MDL = σt ; where σ is the standard deviation and t is the Students t value. For 99% confidence level, 6 degrees of freedom (one-tailed), $t = 3.143$.

² Determined from the total peak areas in the chromatogram from n-C₈ to n-C₄₀ minus any contributions from the internal standard areas.

Individual Analyte Recoveries from Mussel MDL Replicates³

	Analyte Amounts (µg) Added																	
	4.03	4.03	4.01	3.99	4.02	4.02	3.99	3.91	3.99	3.99	4.03	4.03	4.04	4.03	4.03	4.04	4.04	
Non-Spiked Mussel Sample Analyte Concentrations (µg/g)																		
297031724	7.99	0.01	0.07	0.00	0.00	0.01	0.00	0.03	0.04	0.00	0.02	0.02	0.03	0.04	0.06	0.07	0.09	0.10
Mussel MDL Replicate Analyte Percent Recoveries																		
297031717	7.97	88.9	85.1	91.6	89.5	93.4	93.2	86.9	88.4	94.9	85.9	88.1	81.0	76.4	64.9	57.1	49.0	42.9
297031718	7.99	82.8	91.2	84.9	83.7	84.0	84.6	84.5	84.8	90.0	78.4	80.0	73.5	67.9	88.4	51.7	45.0	37.4
297031719	7.99	90.0	127	82.3	87.6	84.0	86.3	89.6	97.7	111	94.9	80.7	68.6	62.7	74.3	58.3	44.0	35.8
297031720	7.99	94.4	86.5	93.6	92.8	96.8	99.0	92.2	89.9	100	88.5	85.8	82.9	70.7	89.1	50.0	42.9	39.3
297031721	7.97	98.2	102	94.7	98.7	96.9	102	99.6	105	110	90.9	90.5	81.0	73.8	66.9	55.2	47.3	40.6
297031722	7.99	134	109	102	88.7	120	183	165	92.3	104	91.0	89.1	81.8	75.1	86.2	53.6	47.1	42.1
297031723	7.98	83.1	94.1	83.9	86.4	86.4	86.2	89.6	93.3	90.7	78.1	76.5	69.8	63.2	77.6	44.9	40.1	35.9

³ The mussel analyte recoveries in each MDL replicate was calculated using the formula: Percent Recovery is calculated as $100 * \text{AMTMDL} / (\text{AMNTADD} + \text{AMNTBKGRD})$ where AMNTMDL is the analyte amount measured following extraction and cleanup of each MDL replicate, which is calculated as

(Sample Wt of the MDL Replicate in g) * (Analyte Concentration in µg/g in the MDL Replicate);

AMNTADD is the amount of analyte added to the unspiked mussel MDL replicate in µg; and

AMNTBKGRD is the measured analyte amount in the non-spiked sample following extraction and cleanup, which is calculated as

(Non-spiked Sample Wt in g) * (Analyte Concentration in µg/g in the Non-spiked Sample).